

## Title (en)

Method and apparatus for detecting the position of fluid-fluid interfaces.

## Title (de)

Verfahren und Vorrichtung zum Erfassen der Position der Grenzschichten zwischen zwei Flüssigkeiten.

## Title (fr)

Procédé et dispositif de détection de la position des interfaces entre deux liquides.

## Publication

**EP 0612983 A1 19940831 (EN)**

## Application

**EP 94102161 A 19940211**

## Priority

US 2221393 A 19930225

## Abstract (en)

Precise information is obtainable concerning the position of a fluid-fluid interface (28, 33), such as between a gas and a liquid or between liquids. Such information is important for the control and automation of molten metal refining processes. Specifically, in an electrolytic process for removing magnesium from molten aluminum, knowledge of the vertical position of an interface (33) between the electrolyte and the magnesium and an interface (28) between the electrolyte and the aluminum facilitates the automatic removal of the purified metals when drained or drawn from the furnace. Heat energy is conducted through a thermocouple-heater assembly 34 to a thermocouple (38) located at its tip (36). The equilibrium temperature at the thermocouple junction is dependent upon the heat loss through tip (36). When the tip comes in contact with a fluid of different thermal conductivity, as between molten matter (29) and electrolyte (30), the equilibrium temperature at tip (36) and, thus, of the thermocouple junction will change. This change in temperature is used to determine the level of the liquid-liquid interface between molten matter (29) and electrolyte (30). This information is used to determine when the drawing of further molten material from the furnace is to be terminated, so that aluminum purified in the refining process and previously drawn through an outlet (26) will not be contaminated. <IMAGE>

## IPC 1-7

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## IPC 8 full level

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## CPC (source: EP KR US)

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## Citation (search report)

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## Designated contracting state (EPC)

DE FR GB IT NL SE

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**US 5394749 A 19950307**; CA 2115389 A1 19940826; EP 0612983 A1 19940831; JP H075018 A 19950110; KR 940019887 A 19940915; KR 960008016 B1 19960619

## DOCDB simple family (application)

**US 25722994 A 19940609**; CA 2115389 A 19940210; EP 94102161 A 19940211; JP 2839894 A 19940225; KR 19940003277 A 19940224